

IN THE CLAIMS**1- 13. (Canceled)**

14. (Currently Amended) The process according to Claim 43 29 for preparing compounds of the formula (I) wherein for olefins of the formula (II) the substituents R¹ to R⁴ are each, independently of one another, hydrogen, alkyl, CN, COOH, COO-alkyl, COO-aryl, CO-alkyl, CO-aryl, O-alkyl, O-aryl, N-alkyl₂, aryl, fluorine, chlorine, bromine, iodine, CHO, CF₃, NHCO-alkyl, CONH₂, CONH-alkyl, or NHCOO-alkyl.

15. (Currently Amended) The process according to Claim 43 29 wherein diols of the formula (I) in which R¹ to R⁴ are each, independently of one another, hydrogen, alkyl, CN, COOH, COO-alkyl, CO-alkyl, CO-aryl, O-alkyl, O-aryl, aryl, fluorine, chlorine, bromine, CHO, or NHCO-alkyl are prepared.

16. (Currently Amended) The process according to Claim 43 29 wherein the oxidant is oxygen or a gas mixture comprising at least 15% by volume of oxygen.

17. (Canceled)

18. (Currently Amended) The process according to Claim 43 29 wherein the reaction proceeds at a temperature of from 20 to 200°C and a pressure of up to 200 bar.

19. (Canceled)

20. (Previously Presented) A The process according to Claim 43 29 wherein the amine is a tertiary amine.

21. (Previously Presented) A The process according to Claim 43 29 wherein the amine is a bicyclic amine of the quinuclidine type.

22. (Currently Amended) The process according to Claim 43 29 wherein a sulfonamide is added as a cocatalyst.

23. (Currently Amended) The process according to Claim 22 wherein the sulfonamide cocatalyst is a methylsulfonamide or and/or a carboxamide.

24. (Currently Amended) The process according to Claim 43 29 wherein the osmium compounds OsO₄, K₂Os₂(OH)₄, Na₂Os₂(OH)₄, Os₃(CO)₁₂, OsCl₃,

H_2OsCl_6 , $[CF_3SO_3Os(NH_3)_5](O_3SCF_3)_2$, OsO_4 on vinylpyridine, or But^tNOsO_3 are used as catalysts or and/or catalyst precursors.

25. (Currently Amended) The process according to Claim 43 29 wherein the manganese compounds MnO_2 , $KMnO_4$, $Ca(MnO_4)_2$, $MnCl_3$, or $Mn(OAc)_3$ are used as catalysts or and/or catalyst precursors.

26. (Currently Amended) The process according to Claim 43 29 wherein the ruthenium compounds $RuCl_3$, RuO_4 , or RuO_2 are used as catalysts or and/or catalyst precursors.

27. (Currently Amended) The process according to Claim 43 29 wherein the catalyst is used in amounts of from 0.2 to 0.00001 equivalents, based on the olefin.

28. (Currently Amended) The process according to Claim 43 29 wherein the ratio of amine to metal is from 0.01:1 to 1 000:1.

29. (New) A process for the dihydroxylation of olefins using transition metal catalysts to obtain monofunctional, bifunctional, and/or polyfunctional 1,2-diols of the formula (I)



where

R^1 to R^4 are each, independently of one another, hydrogen, alkyl, CN, COOH, COO -alkyl, COO -aryl, CO-alkyl, CO-aryl, O-alkyl, O-aryl, O-CO-aryl, O-CO-alkyl, $OCOO$ -alkyl, N-alkyl₂, NH-alkyl, N-aryl₂, NH-aryl, NO, NO_2 , NOH , aryl, fluorine, chlorine, bromine, iodine, Si-alkyl₃, CHO, SO_3H , SO_3 -alkyl, SO_2 -alkyl, SO-alkyl, CF_3 , $NHCO$ -alkyl, $CONH_2$, CONH-alkyl, $NHCOH$, $NHCOO$ -alkyl, $CHCHCO_2$ -alkyl, $CHCHCO_2H$, PO -(aryl)₂, PO (alkyl)₂, PO_3H_2 , or PO (O-alkyl)₂, where alkyl is a linear, branched, or cyclic aliphatic organic group having from 1 to 18 carbon atoms and aryl is a 5-, 6-, or 7-membered aromatic ring containing from 4 to 14 carbon atoms and from 0 to 3 heteroatoms and is optionally fused, and where the alkyl or the aryl group optionally bears up to six substituents selected independently from the group consisting of hydrogen, alkyl, O-alkyl, OCO -alkyl, O-aryl, aryl, fluorine,

chlorine, bromine, iodine, OH, NO₂, NO, Si-alkyl₃, CN, COOH, CHO, SO₃H, NH₂, NH-alkyl, N-alkyl₂, PO-alkyl₂, SO₂-alkyl, SO-alkyl, CF₃, NHCO-alkyl, COO-alkyl, CONH₂, CO-alkyl, NHCOH, NHCOO-alkyl, CO-aryl, COO-aryl, PO-aryl₂, PO₃H₂, PO(O-alkyl)₂, and SO₃-alkyl, where alkyl and aryl are as defined above,

comprising reacting an olefin of the formula (II)



where R¹ to R⁴ are defined as for formula (I),

with an oxidant comprising molecular oxygen or a gas mixture comprising molecular oxygen in the presence of an osmium, ruthenium, or manganese compound in water or a water-containing solvent mixture at a pH of from 7.5 to 13; and adding an amine to achieve improved selectivity.